

**REMARKS**

Reconsideration of this application based on the foregoing Amendment and the following Remarks is respectfully requested.

The Preliminary Amendment filed with the CPA was based on the unentered amendment, i.e., Response After Final Rejection Under 37 CFR 1.116, mailed on September 3, 2002.

At the outset, prior to addressing the merits of the issues raised in the Office Action, the applicant calls to the Examiner's attention that claim 4 has been rewritten into independent form to incorporate the subject matter of claim 2 therein, except for the limitations of "a backlight portion for illuminating said liquid crystal display panel from the backside thereof, luminance of backlight by said backlight portion becomes lower as the distance from said gate signal input portion becomes larger", which have been omitted.

Accordingly, the foregoing subject matter of claim 2 has been incorporated into claim 4, and claim 2 has been cancelled without prejudice. Claims 3, 6 and 7 have been amended to change their dependency from cancelled claim 2 to now independent claim 4.

Claim 5 has been cancelled without prejudice and its limitations, including those of its base claim 2, incorporated into new claim 17, which is discussed below.

Claim 10 has been rewritten into independent form including all of the limitations of claim 9.

Accordingly, the subject matter of claim 9 has been incorporated into claim 10, and claim 9 has been cancelled without prejudice. Claims 11, 12 and 13 have

been amended to change their dependency from cancelled claim 9 to now independent claim 10.

New claim 15 has been added, which depends from claim 4. The limitations of claim 15 are supported by FIG. 4 of the present application which discloses a thin film transistor (TFT) comprising a drain (D) signal line 15, a gate G connected to a gate signal line 13, the drain signal line coupled to the gate signal line, a source line S, corresponding to a pixel electrode coupled to an opposing electrode 21 disposed on a substrate, the pixel electrode having a gate G coupled to the signal line 13, and a gap portion between the opposing electrode 21 and a nitride protective film (24 in FIGS. 3A-3C) between the pixel electrode and the gate signal line being filled with liquid crystal (22 in FIGS. 3A-3C). As disclosed on page 22, lines 27-29, the storage capacitance  $C_{sc}$  is formed by the overlap of the pixel electrode 16 with the gate signal line 13. As disclosed on page 4, lines 7-10, the LC capacitance  $C_{lc}$  exists between the source electrode of the TFT 14, i.e., a display electrode (or pixel electrode), and an opposing electrode 21. FIG. 4 discloses that the gate-source capacitance  $C_{gs}$  exists between the source S or pixel electrode and the gate G and gate signal line 13. Page 4, lines 12-13, discloses a gate pulse amplitude  $\Delta V_g$ . Page 4, lines 18-25, defines a total TFT leakage current flowing from a source (pixel) electrode to a drain signal lines until the TFT current is completely dissipated, i.e., until the TFT 14 is completely turned off, as  $\int I_{ds} dt$ . Page 8, lines 17-21, discloses the following: "assuming that the feedthrough voltage component and the storage capacitance at the portion A of Fig. 12 are  $V_{fdin}$  and  $C_{sc}$ , respectively, and that the feedthrough voltage component and the

storage capacitance at the portion Co Fig. 12 are  $V_{fdout}$  and  $C_{sc'}$ , respectively,....". Therefore, variation of storage capacitance,  $C_{sc}$ , with distance from the gate signal line is defined as  $C_{sc'}$ . Page 10, lines 6-10, discloses that the relationship between the storage capacitance values  $C_{sc}$  and  $C_{sc'}$  is as follows:

$$C_{sc'} = [ \{ (C_{gs})(\Delta V_g) - \int I_{ds} dt \} \{ C_{lc} + C_{sc} + C_{gs} \} ] / \{ (C_{gs})(\Delta V_g) \} - (C_{lc} - C_{gs}) \quad \text{Eqn. (6).}$$

New claim 16, which is analogous to claim 15, is similarly supported by the foregoing disclosure of the referenced figures and portions of the specification.

New claim 17 is supported by the previous limitations of claim 2, and 5 and by the foregoing disclosure of the referenced figures and portions of the specification identified for new claim 15. The previous limitations of claim 2 of "a backlight portion for illuminating said liquid crystal display panel from the backside thereof, luminance of backlight by said backlight portion becomes lower as the distance from said gate signal input portion becomes larger" have been omitted.

The applicant has not abandoned the subject matter of cancelled claims 2, 5, and 9 and reserves the right of reinstatement in the instant application or to file a continuation application directed thereto.

No new matter has been added by any of the amendments to claims 3, 4, 6, 7 and 10-13 or by the addition of new claims 15, 16 and 17.

**35 U.S.C 103(a) Rejections: Claims 2-7 and 9-14**

The Examiner rejects claims 2-7 and 9-13 under 35 U.S.C. 103(a) as being unpatentable over Nishikawa (JP 05-232509, published September 10, 1993) in view of Taniguchi et al (US (U.S. 6,334,689 B1 – filed February 25, 1999 – issued January 1, 2002).

The applicant notes that claim 1 was cancelled and claim 2 was rewritten into independent form and further amended claims 2 and 9 to recite the limitation: --the aperture ratio increasing as the capacitance of said auxiliary capacitor portions becomes smaller--. The dependency of claims 4 and 5 was changed from cancelled claim 1 to now independent claim 2.

The applicant notes also that although Nishikawa is cited and referred to by the Examiner in the Office Action, the USPTO did not provide a translation. Therefore, the applicant is using the machine translation provided by the Japan Patent Office.

**Claims 2 and 9:**

The Examiner asserts that Nishikawa, FIGS. 2 and 3, paragraph [0013], discloses all of the limitations of the liquid crystal display device of claims 2 and 9 including a plurality of pixels, switching elements 1 formed of a thin film transistor (TFT), and pixel electrodes 20, each said pixel having an opening defining an aperture ratio.

The applicant maintains that the Examiner has not provided an explicit reference showing how Nishikawa defines the aperture ratio except to refer to FIGS. 2 and 3.

The Examiner also asserts that Nishikawa, FIG. 2 and paragraphs [0013]- [0018], discloses auxiliary capacity lines 3, and auxiliary capacity electrodes 13, and auxiliary capacitor portions CSCA, CSCB, CSCC. Please note that the applicant is quoting the following from the machine translation, [0018]

“the auxiliary capacity portion formed in the superposition section of the pixel electrode 20 and auxiliary capacity electrode 13 in the relation CSCA>CSCB>CSCC, and even if a gate signal declines by the far edge, it can compensate a *charge property and distributor-shaft-coupling?? down ΔV.*”

The Examiner asserts based on the foregoing and the Abstract that Nishikawa anticipates the “auxiliary capacitor portions each additionally coupled with a pixel electrode of one of said pixel, the width of said gate signal line becomes smaller as the distance from said gate signal input portion becomes larger” recited by claims 2 and 9.

Again with respect to claims 2 and 9, the Examiner asserts that it would have been obvious that the aperture ratio increases as the capacitance of the auxiliary capacitor portions becomes smaller.

The applicant maintains that the Examiner has not cited any specific portion of Nishikawa to make this assertion.

The applicant herein directs the Examiner’s attention to the fact that claims 2 and 9 have been cancelled without prejudice, thereby rendering the rejections moot.

**Claims 4-5, 10-11:**

With respect to claims 4-5 and 10-11, the Examiner cites FIG. 3 of Nishikawa as disclosing wherein capacitance of each of said auxiliary capacitor portions is determined by an area of an opposing portion of a pixel electrode of a pixel and a gate signal line coupled with an adjacent pixel via an interlayer insulating film 14 and an *oxide film 28* between said pixel electrode and said gate signal line.

In particular with respect to FIG. 3, the applicant notes that 26 is a counter electrode, 20 is a pixel electrode, 12 is a gate, *21 is an SiNx film*, and 14 is an insulator layer of *SiNx*.

Claims 4 and 10 recite a *nitride film* between the pixel electrode and the gate signal line, and not an *oxide film* as cited by the Examiner. FIG. 3 of Nishikawa discloses an SiNx film 21 on top of the pixel electrode 20 and also above the gate line 12. Insulator layer 14 of SiNx appears to be located between gate line 12 and pixel electrode 20.

The applicant maintains that neither Nishikawa nor Taniguchi et al, taken alone or in combination, disclose, teach or suggest the limitations of claims 4 and 10 of an interlayer insulating film and a nitride film between the pixel electrode and the gate signal line as recited by claims 4 and 10. Therefore, claims 4 and 10 patentably distinguish over Nishikawa and Taniguchi et al, taken alone or in combination.

The applicant herein directs the Examiner's attention to the fact that claim 5 has been cancelled, thereby rendering the rejection moot.

Claims 3, 6 and 7 have been amended to depend from claim 4.

Claims 11-13 have been amended to depend from claim 10. Therefore, the applicant maintains that Taniguchi et al do not overcome the deficiencies of Nishikawa with respect to claims 4 and 10.

Consequently, claims 3, 6 and 7 and claims 11-13 patentably distinguish over Nishikawa and Taniguchi et al, taken alone or in combination.

**Claims 2-7 and 9-13**

The Examiner asserts that Nishikawa discloses an LCD device that is basically the same as that recited in claims 2-7 and 9-13, except for a backlight portion. The Examiner continues to reject the backlight portions recited by claims 2, 6-7 and 9, 12-13 on the same basis as in the first Office Action of January 28, 2002 and the Final Rejection of July 2, 2002 with respect to Taniguchi et al.

That is, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the LCD device of *Nishikawa* (*instead of Kuroha et al previously*) as taught by Taniguchi et al by employing a backlight portion for illuminating said liquid crystal display panel from the backside thereof so that luminance of backlight by said backlight portion becomes lower as the distance from said gate signal input portion becomes larger so as to obtain a high image luminance and a high image quality display.

The applicant herein directs the Examiner's attention to the fact that, as noted previously, claims 2 and 9 have been cancelled without prejudice. Claims 6 and 7 have been amended to depend from claim 4. Claims 12-13 have been

amended to depend from claim 10. Claim 4, as amended, does not recite the limitations of a backlight portion. The applicant maintains that Taniguchi et al do not overcome the deficiencies of Nishikawa with respect to claims 4 and 10. Therefore, claims 4, 5-7 and 10-13 patentably distinguish over Nishikawa and Taniguchi et al, taken alone or in combination.

Consequently, claims 4, 5-7 and 10-13 patentably distinguish over Nishikawa in view of Taniguchi et al. As a result, the applicant respectfully requests the Examiner to withdraw the rejections of claims 4, 5-7 and 10-13.

The foregoing Amendment and Remarks establish the patentable nature of all of the claims remaining in the application, i.e., claims 3-4, 6-7 and 10-13. New claims 15, 16 and 17 have been added. No new matter has been added. Wherefore, early and favorable reconsideration and issuance of a Notice of Allowance are respectfully requested.

Respectfully submitted,



Anthony N. Fresco  
Registration No. 45,784

SCULLY, SCOTT, MURPHY & PRESSER  
400 Garden City Plaza  
Garden City, New York 11530  
(516) 742-4343/ 4366 FAX

ANF:yd